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(54) **A DENTAL FLOSS DEVICE**
VORRICHTUNG FÜR ZAHNSEIDE
DISPOSITIF POUR FIL DENTAIRE

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Description

The invention relates to a dental floss device of the type comprising:-

a handle having a head piece;
a disposable dental floss holder for interengagement with the head piece in assembly;
the dental floss holder comprising a base portion and a pair of spaced-apart jaws extending from the base portion to accommodate a length of dental floss therebetween; and

releasable engagement means between the head piece of the handle and the dental floss holder.

A dental floss device of this type is described in US 3,892,249. The device described in this prior specification comprises a handle having a curved head piece with in-turned jaws which have formations which interengage with complementary formations on a dental floss holder. The holder is of flexible material and is bowed for fitting to the jaws of the head piece and thumb pressure applied.

One of the problems with known dental floss devices of this type is that the dental floss holder may be difficult to engage and disengage with the head piece. There is also a substantial risk of the dental floss holder becoming detached from the head piece in use in the mouth.

This invention is directed towards providing a dental floss device which will overcome at least some of the problems with known devices.

This invention is characterised in that:-

the releasable engagement means includes a transversely extending groove in the head piece of the handle or the base portion of the dental floss holder and a complementary tongue portion on the other of the base portion or head piece, the tongue portion engaging with the transverse groove, in assembly,

the releasable engagement means also including snap fitting means comprising snap fit projections on the jaws of the dental floss holder or the head piece the projections snap fittingly engaging on engagement of the tongue portion with the transverse groove to retain the dental floss holder securely in position on the head piece of the handle during movement of the holder in use in the mesio-distal, bucco-lingual and gingivoincisoral directions.

The advantage of the arrangement is in ensuring that the device may be effectively and safely used in all directions of operation in use. The distal-medial direction refers to the direction across the face of a tooth in a substantially horizontal plane. The bucco-lingual direction refers to the movement in approximately in a substantially horizontal plane. The gingivo-incisoral motion refers to the flossing motion in a vertical plane.

The arrangement facilitates the flossing action in use and ease of manufacture. The length of floss may be integral with the jaws or may be attached thereto by any suitable means such as adhesives or the like. The provision of a transverse groove and tongue affords particular advantages of strength in use and ease of attach-

ment and disconnection of the holder. Snap-fitting engagement in addition to the tongue and groove arrangement provides for ease of attachment and disconnection while adding to the ability of the connection to resist the forces generated in use.

Preferably for ease of fitting and construction the snap-fit projections are provided on the jaws of the holder to engage adjacent to the groove of the head piece. Typically the projections extend inwardly from the jaws of the holder to engage the head piece adjacent to the groove of the head piece.

In a particularly preferred embodiment which is preferred for ease of fitting and strength in use the groove is of arcuate shape in longitudinal cross section for interengagement with a correspondingly shaped tongue portion.

According to a further embodiment of the invention the head piece includes an additional retaining means for movement between a released position for fitting and removal of the head piece to a locking position substantially enclosing the head piece in the holder. This arrangement leads to a particularly strong construction.

For ease of construction and use the additional retaining means may be hingedly connected, for example, by means of a live hinge, to the head piece.

For additional strength and ease of use the additional retaining means snap-fittingly engages, typically by snap-fit projections on the additional retaining means, with the head piece in the locking position.

Preferably the handle includes a shank portion which is inclined in the longitudinal direction at an angle of between 145° and 180° to the handle.

Preferably also the handle includes a shank portion and the head-piece is inclined in the longitudinal direction at an angle of between 125° and 180° to the shank portion.

The device is most preferably substantially of plastics material. The head piece may be of the same or different plastics material than that of the holder.

The invention will be more clearly understood from the following description thereof given by way of example only with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view of a dental floss device according to one embodiment of the invention;

Fig. 2 is an exploded view of the dental floss device of Fig. 1;

Fig. 3 is a side view of the device;

Fig. 4 is a cross-sectional view of the device;

Fig. 5 is a diagrammatic view illustrating the operation of the device;

Fig. 6 is a perspective view of another dental device according to the invention;

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Fig. 7 is an exploded view of the device of Fig. 6;

Fig. 8 is a cross-sectional view of the device of Fig. 6;

Fig. 9 is a perspective view of another dental floss device according to the invention;

Fig. 10 is an exploded view of the device of Fig. 9;

Fig. 11 is a partial side cross-sectional view of the device of Fig. 9;

Fig. 12 is a perspective view of another dental floss device according to the invention;

Fig. 13 is an exploded view of the device of Fig. 12;

Fig. 14 is a partial side cross-sectional view of the device of Fig. 12;

Referring to the drawings and initially to Figs. 1 to 5 thereof there is illustrated a dental floss device according to the invention indicated generally by the reference numeral 1. The device 1 comprises a handle 2 having a shank portion 3 terminating in a head piece 4. The dental floss device 1 also comprises a disposable dental floss holder 5, the holder 5 and the head piece 4 having releasable engagement means for fitting and disposal of the holder 5.

The holder 5 comprises a base portion 10 which in this case is of arcuate shape in longitudinal cross section and a pair of spaced-apart jaws 11, 12 extending from the base portion 10 to accommodate a length of dental floss 13 therebetween. The dental floss 13 may be integrally moulded with the holder 5 or may be attached by any suitable means to the holder such as by adhesive bonding.

The releasable engagement means in this case include snap-fit projections 15 which extend inwardly from the jaws 11, 12 of the holder 5 as will be particularly apparent from Figs. 4 and 2.

The head piece 4 of the handle 2 includes a transversely extending groove 20 defined between a pair of upstanding shoulders 21, 22 and a floor 24 of the head piece 4. The groove 20 is of similar shape and dimension to that of the base portion 10 of the holder 5 and the marginal edges 25 of the floor 24 of the groove 20 are rounded to accommodate the snap-fit projections 15 as they ride over the marginal edges 25 of the floor 24 of the groove. At least part of the base portion 10 of the floss holder 4 defines a tongue portion which in use is securely retained within the groove 20.

In use, the holder 5 is fitted to the head piece by first inserting the head piece 4 through the gap defined between the jaws 11, 12 of the holder 5 and dropping the holder 5 into the groove 20. Light finger pressure is then applied to the base 10 of the holder 5 to push the snap-projections 15 over the marginal edges 25 of the groove 20 until they engage with the floor 24 of the groove 20

as illustrated in Fig. 4. In this fitted position the holder 5 is positively restrained from movement or deflection in all positions and directions of use of the dental floss device 1.

Referring particularly to Fig. 5 the various directions of use of the dental floss device are diagrammatically illustrated. The arrows X indicate the bucco-lingual direction in which the floss 13 is drawn interproximally forward and backwards in the gap between adjacent teeth. The arrows Z indicate the mesio-distal direction which is the movement of the floss across the face of the teeth. The arrows Y indicate the gingivo-incisal directions of the cleaning action in a vertical plane Z using the dental floss device.

Referring particularly to Fig. 3 it will be appreciated that the handle of the device may be arranged at any suitable angle and may be of any desired shape. For ease of access in use in this case the shank 3 extends at an angle B to the handle 2 of between 145 and 180°. The head piece 4 is inclined at an angle A to the shank 3 of between 125 and 180°. The particular angle and configuration presents a dental floss device which may be readily used with all teeth in the mouth with minimum discomfort to the user. It will be appreciated that in the other embodiments described below similar angular configurations may be utilised.

The invention provides a dental floss device which is of simple construction and easy to use. It offers a dental device with holders for dental floss which can be readily fixed in position and replaced as desired. Because of this simplicity and ease of construction it is anticipated that the device will lead to far more widespread use of dental floss. Because the dental floss holder is easily replaceable and yet retained effectively in position in all directions of use it is easy and safe to use.

Referring to Figs. 6 to 8 there is illustrated another dental floss device according to the invention indicated generally by the reference numeral 40. The device 40 is similar to the device described above with reference to Figs. 1 to 4 and like parts are assigned the same reference numerals. In this case the base portion 10 of the dental floss holder 5 and the groove 20 of the head piece 4 are of generally horizontal rather than arcuate shape in longitudinal cross section. It is anticipated that this device according to this embodiment of the invention will be slightly cheaper due to less complex moulding requirements.

Referring to Figs. 9 to 11 there is illustrated another dental floss device 50 according to the invention. The device 50 is again similar to the device illustrated in Figs. 1 to 5 and like parts are assigned the same reference numerals. In this case the head piece comprises a channel member having a base 51, a first side web 52a extending from the shank 3 and a second side web 52b which are sized and shaped to receive the base portion 10 of the dental floss holder 5. Additional retaining means 4 for retaining the holder in position is in this case provided by an extension plate 53 which extends from and is hingedly interconnected by a plastics hinge 55 to

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the side web 52b. The extension plate 53 has inwardly extending snap-fit projections 55 which engage over the shank 3 of the handle 2 in the closed position illustrated in Figs. 9 and 11. In the released position illustrated in Figs. 9 and 11 it will be noted that the base portion 10 of the dental floss holder 5 is completely confined against movement in all directions leading to a particularly strong construction. It is noted that the side web 52a is extended sidewardly from the jaws 11, 12 and a part of the jaws 11, 12 are moved and a fresh holder 5 the snap projections 55 are released from the shank 3 of the handle 2. The extension plate 53 is pushed into the released position illustrated in Fig. 11 allowing the holder 5 to be moved and a fresh holder 5 to be placed in position. The hinge 55 may be a live hinge which biases the holder 5 towards the shank 3 and/or away from the shank 3 to facilitate insertion and removal of a holder 5.

Referring to Figs. 10 and 11 there is illustrated another dental floss holder according to the invention indicated generally by the reference numeral 60. The dental floss holder 60 is similar to the holder 5 illustrated in Figs. 9 to 11 and like parts are indicated by the same reference numerals. In this case the holder 60 is defined by a base wall 61 and side webs 62a, 62b extending from the base wall 61, the side webs having inwardly extending edges 63 to facilitate snap-in of the holder 60 into the head piece 4. One of the side webs 62 includes a U-shaped extension 65 which is hingedly connected to the web 62b by a plastic hinge 66 and has an inwardly extending projection 67 which, in the locked position illustrated in Figs. 10 and 12, enters the gap between the projections 63 to even more positively retain the holder 60 in position on the head piece 4. The device is similar in a similar manner to the device illustrated in Figs. 9 to 11.

The dental floss device may be of any suitable material of construction. Preferably the device is of substantially plastic material. The head piece may be of the same or different plastic material than that of the holder.

Claims

1. A dental floss device 50, 60 of the type comprising:
 - a handle (2);
 - a head piece (4);
 - a disposable dental floss holder (5) for interengagement with the head piece (4), on assembly;
 - the dental floss holder (5) comprising a base portion (10) and a spaced-apart jaws (11, 12) extending from the base portion (10) to accommodate a length of dental floss (13) therebetween; and
 - releasable engagement means between the head piece (4) of the handle (2) and the dental floss holder (5);

characterised in that

the releasable engagement means includes a transversely extending groove (20) in the head piece (4) of the handle (2) or the base portion (10) of the dental floss holder (5) and a complementary tongue portion (10) on the other of the base portion (10) or head piece (4), the tongue portion (10) engaging with the transverse groove (20), on assembly,

the releasable engagement means also including snap fitting means comprising snap fit projections (15) on the jaws (11, 12) of the dental floss holder (5) or the head piece (4), the projections (15) snap fittingly engaging on engagement of the tongue portion (10) with the transverse groove (20) to retain the dental floss holder (5) securely in position on the head piece (4) of the handle (2) during movement of the holder (5) in use in the mesio-distal, bucco-lingual and gingivoincisoral directions.

2. A dental floss device as claimed in claim 1 characterised in that the groove (20) is of arcuate shape in longitudinal cross section for interengagement with a correspondingly shaped tongue portion (10).
3. A dental floss device as claimed in claim 1 or 2 characterised in that the groove (20) is defined by the head piece (4) of the handle (2) and the corresponding tongue portion (10) is defined by the base portion (10) of the dental floss holder (5).
4. A dental floss device as claimed in claim 3 characterised in that the projections (15) extend inwardly from the jaws (11, 12) of the holder (5) to engage the head piece (4) adjacent to the transverse groove (20).
5. A dental floss device as claimed in any preceding claim characterised in that the transversely extending groove (20) is closed at both ends to securely retain the tongue portion (10).
6. A dental floss device as claimed in any preceding claim characterised in that the head piece (4) includes an additional retaining means (53) for movement between a released position for fitting and removal of the head piece (4) to a locking position substantially enclosing the head piece (4) in the holder (5).
7. A dental floss device as claimed in claim 6 characterised in that the additional retaining means (53) is hingedly connected (55) to the head piece (4).
8. A dental floss device as claimed in claim 7 characterised in that the additional retaining means (53) is hingedly connected to the head piece (4) by a live hinge (55).

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9. A dental floss device as claimed in any of claims 6 to 8 characterised in that the additional retaining means (53) snap-fittingly (56) engages with the head piece (4) in the locking position.
10. A dental floss device as claimed in claim 9 characterised in that the additional retaining means (53) is provided with snap-fit projections (56) which engage with the head piece (4) in the locking position.
11. A dental floss device as claimed in any preceding claim characterised in that the handle (2) includes a shank portion (3) which is inclined in the longitudinal direction at an angle of between 145° and 180° to the handle (2).
12. A dental floss device as claimed in any preceding claim characterised in that the handle (2) includes a shank portion (3) and the head-piece (4) is inclined in the longitudinal direction at an angle of between 125° and 180° to the shank portion.
13. A dental floss device as claimed in any preceding claim characterised in that the device (1,40,50,60) is substantially of plastics material.
14. A dental floss device as claimed in claim 13 characterised in that the head piece (4) is of the same plastics material as that of the holder (5).
15. A dental floss device as claimed in claim 13 characterised in that at least portion of the holder (5) is of a different plastics material than that of the head piece (4).
- Patentansprüche**
1. Vorrichtung für Zahnseide (1,40,50,60), umfassend einen Handgriff (2) mit einem Kopfstück (4); einen abnehmbaren Zahnseidenhalter (5), welcher beim Zusammenbau mit dem Kopfstück (4) verbunden wird; wobei der Zahnseidenhalter (5) einen Basisteil (10) und ein Paar beabstandeter Backen (11,12) umfasst, welche sich von dem Basisteil (10) aus erstrecken und zwischen sich ein Stück Zahnseide (13) aufnehmen; und lösbares Verbindungsmittel zwischen dem Kopfstück (4) des Handgriffs (2) und dem Zahnseidenhalter (5); dadurch gekennzeichnet, dass die lösbaren Verbindungsmittel eine sich quer im Kopfstück (4) des Handgriffs (2) oder im Basisteil (10) des Zahnseidenhalters (5) erstreckende Nut (20) umfassen, sowie ein komplementäres Zungenteil (10) am anderen des Basisteils (10) oder des Kopfstücks (4), wobei das Zungenteil (10) beim Zusammenbau in die transversale Nut (20) eingreift, dass die lösbaren Verbindungsmittel zusätzlich Einrastmittel einschließen, welche Einrastnasen (15) auf den Backen (11,12) des Zahnseidenhalters (5) oder des Kopfstücks (4) umfassen, welche Nasen (15) beim Eingriff des Zungenteils (10) mit der transversalen Nut (20) formschlüssig einrasten und den Zahnseidenhalter (5) sicher in der Position auf dem Kopfstück (4) des Handgriffs (2) halten, wenn der Halter (5) beim Gebrauch in der mesio-distalen, der buccolingualen und der gingivoincisaalen Richtung bewegt wird.
2. Vorrichtung für Zahnseide nach Anspruch 1, dadurch gekennzeichnet, dass die Nut (20) im Längsschnitt von gebogener Form ist für den Eingriff mit einem entsprechend geformten Zungenteil (10).
3. Vorrichtung für Zahnseide nach einem der Ansprüche 1 oder 2, dadurch gekennzeichnet, dass die Nut (20) durch das Kopfstück (4) des Handgriffs (2) bestimmt wird, und das zugehörige Zungenteil (10) durch den Basisteil (10) des Zahnseidenhalters (5).
4. Vorrichtung für Zahnseide nach Anspruch 3, dadurch gekennzeichnet, dass die Nasen (15) sich von den Backen (11,12) des Halters (5) einwärts erstrecken und in unmittelbarer Nachbarschaft zur transversalen Nut (20) mit dem Kopfstück (4) in Eingriff kommen.
5. Vorrichtung für Zahnseide nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass die sich transversal erstreckende Nut (20) zum sicheren Halten des Zungenteils (10) an beiden Enden geschlossen ist.
6. Vorrichtung für Zahnseide nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass das Kopfstück (4) zusätzliche Haltermittel (53) einschließt, welche bewegt werden können zwischen einer entriegelten Position für das Einsetzen und die Entnahme des Kopfstücks (4) und einer verriegelten Position, in welcher das Kopfstück (4) am Halter (5) im wesentlichen umschlossen wird.
7. Vorrichtung für Zahnseide nach Anspruch 6, dadurch gekennzeichnet, dass die zusätzlichen Haltermittel (53) verschwenkbar (55) mit dem Kopfstück (4) verbunden sind.
8. Vorrichtung für Zahnseide nach Anspruch 7, dadurch gekennzeichnet, dass die zusätzlichen Haltermittel (53) durch ein angeformtes Scharnier (55) verschwenkbar mit dem Kopfstück (4) verbunden sind.
9. Vorrichtung für Zahnseide nach einem der Ansprüche 6 bis 8, dadurch gekennzeichnet, dass die zusätzlichen Haltermittel (53) in der Verriegelungsposition mit dem Kopfstück (4) formschlüssig einrastend (56) in Eingriff kommen.

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10. Vorrichtung für Zahnhalteapparat nach Anspruch 9, dadurch gekennzeichnet, dass die zusätzlichen Haltemittel (53) mit festsitzend einrastenden Nasen (56) versehen sind, die in der Verriegelungsposition mit dem Kopfstück (4) in Eingriff kommen.
11. Vorrichtung für Zahnhalteapparat nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass der Handgriff (2) einen Schaftteil (3) einschliesst, welcher in Längsrichtung mit einem Winkel zwischen 120° und 180° zum Handgriff (2) geneigt ist.
12. Vorrichtung für Zahnhalteapparat nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass der Handgriff (2) einen Schaftteil (3) einschliesst, und dass der Schaftteil (3) in der Längsrichtung mit einem Winkel zwischen 125° und 180° zum Schaftteil geneigt ist.
13. Vorrichtung für Zahnhalteapparat nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass die Vorrichtung (50, 60) im wesentlichen aus einem Kunststoffmaterial besteht.
14. Vorrichtung für Zahnhalteapparat nach Anspruch 13, dadurch gekennzeichnet, dass das Kopfstück (4) aus demselben Kunststoffmaterial wie der Halter (5) besteht.
15. Vorrichtung für Zahnhalteapparat nach Anspruch 13, dadurch gekennzeichnet, dass wenigstens ein Teil des Halters (5) aus einem anderen Kunststoff als das Kopfstück (4) besteht.

Revendications

1. Dispositif de fil dentaire selon les revendications 40, 50, 60) du type comprenant :-
un manche (2) ayant une partie de tête (4);
un support (5) de fil dentaire jetable destiné à s'engager avec la partie de tête (4), au cours de l'assemblage;
le support (5) de fil dentaire comprenant une portion de base (10) et une portion de mâchoires espacées (11, 12) s'étendant à partir de la portion de base (10) pour recevoir une portion de fil dentaire (13) entre elles; et
un moyen d'engagement desserrable entre la partie de tête (4) du manche (2) et le support (5) de fil dentaire;
caractérisé en ce que le moyen d'engagement desserrable comporte une rainure (20) s'étendant transversalement dans la partie de tête (4) du manche (2) ou dans la portion de base (10) du support (5) de fil dentaire et une portion de langue (10) supplémentaire (10) sur l'autre respectivement de la portion de base (10) ou de la partie de tête (4), la portion de langue (10) engageant la rainure transversale (20) au cours de l'assemblage.

le moyen d'engagement desserrable comportant également un moyen d'endiquetage comprenant des projections d'endiquetage (15) sur les mâchoires (11, 12) du support (5) de fil dentaire ou sur la partie de tête (4), les projections (15) s'engageant par endiquetage lors de l'engagement de la portion de langue (10) avec la rainure transversale (20) pour retenir le support (5) de fil dentaire solidement en place sur la partie de tête (4) du manche (2) au cours du déplacement du support (5) lors de son utilisation dans les directions méso-distale, bucco-linguale et gingivoinciséale.

2. Dispositif de fil dentaire selon la revendication 1, caractérisé en ce que la rainure (20) a une forme arquée dans sa section longitudinale pour permettre son engagement avec une portion de langue (10) de forme correspondante.
3. Dispositif de fil dentaire selon la revendication 1 ou 2, caractérisé en ce que la rainure (20) est définie par la partie de tête (4) du manche (2) et la portion de langue correspondante (10) est définie par la portion de base (10) du support (5) de fil dentaire.
4. Dispositif de fil dentaire selon la revendication 3, caractérisé en ce que les projections (15) s'étendent vers l'intérieur depuis les mâchoires (11, 12) du support (5) pour engager la partie de tête (4) à proximité de la rainure transversale (20).
5. Dispositif de fil dentaire selon l'une quelconque des revendications précédentes, caractérisé en ce que la rainure (20) s'étendant transversalement est fermée aux deux extrémités pour retenir solidement la portion de langue (10).
6. Dispositif de fil dentaire selon l'une quelconque des revendications précédentes, caractérisé en ce que la partie de tête (4) comporte un moyen de retenue (53) supplémentaire destiné à se déplacer entre une position desserrée pour l'insertion et le retrait de la partie de tête (4) et une position de verrouillage enfermant substantiellement la partie de tête (4) dans le support (5).
7. Dispositif de fil dentaire selon la revendication 6, caractérisé en ce que le moyen de retenue (53) supplémentaire est relié par une articulation (55) à la partie de tête (4).
8. Dispositif de fil dentaire selon la revendication 7, caractérisé en ce que le moyen de retenue (53) supplémentaire est relié par une articulation à la partie de tête (4) par une charnière (55).
9. Dispositif de fil dentaire selon l'une quelconque des revendications 6 à 8, caractérisé en ce que le moyen de retenue (53) supplémentaire s'engage par endi-

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quetage (56) avec la partie de tête (4) dans la position de verrouillage.

10. Dispositif de fil dentaire selon la revendication 9, caractérisé en ce que le moyen de retenue (53) supplémentaire est pourvu de projections d'endiquetage (58) qui s'engagent avec la partie de tête (4) dans la position de verrouillage. 5
11. Dispositif de fil dentaire selon l'une quelconque des revendications précédentes, caractérisé en ce que le manche (2) comporte une portion de tige (3) qui est inclinée dans la direction longitudinale à un certain angle compris entre 145° et 180° par rapport au manche (2). 10 15
12. Dispositif de fil dentaire selon l'une quelconque des revendications précédentes, caractérisé en ce que le manche (2) comporte une portion de tige (3) et la partie de tête (4) est inclinée dans la direction longitudinale à un certain angle compris entre 125° et 180° par rapport à la portion de tige. 20
13. Dispositif de fil dentaire selon l'une quelconque des revendications précédentes, caractérisé en ce que le dispositif (1, 40, 50, 60) est substantiellement en matériau plastique. 25
14. Dispositif de fil dentaire selon la revendication 13, caractérisé en ce que la partie de tête (4) est constituée du même matériau plastique que le support (5). 30
15. Dispositif de fil dentaire selon la revendication 13, caractérisé en ce qu'au moins une portion du support (5) est en un matériau plastique différent de celui de la partie de tête (4). 35

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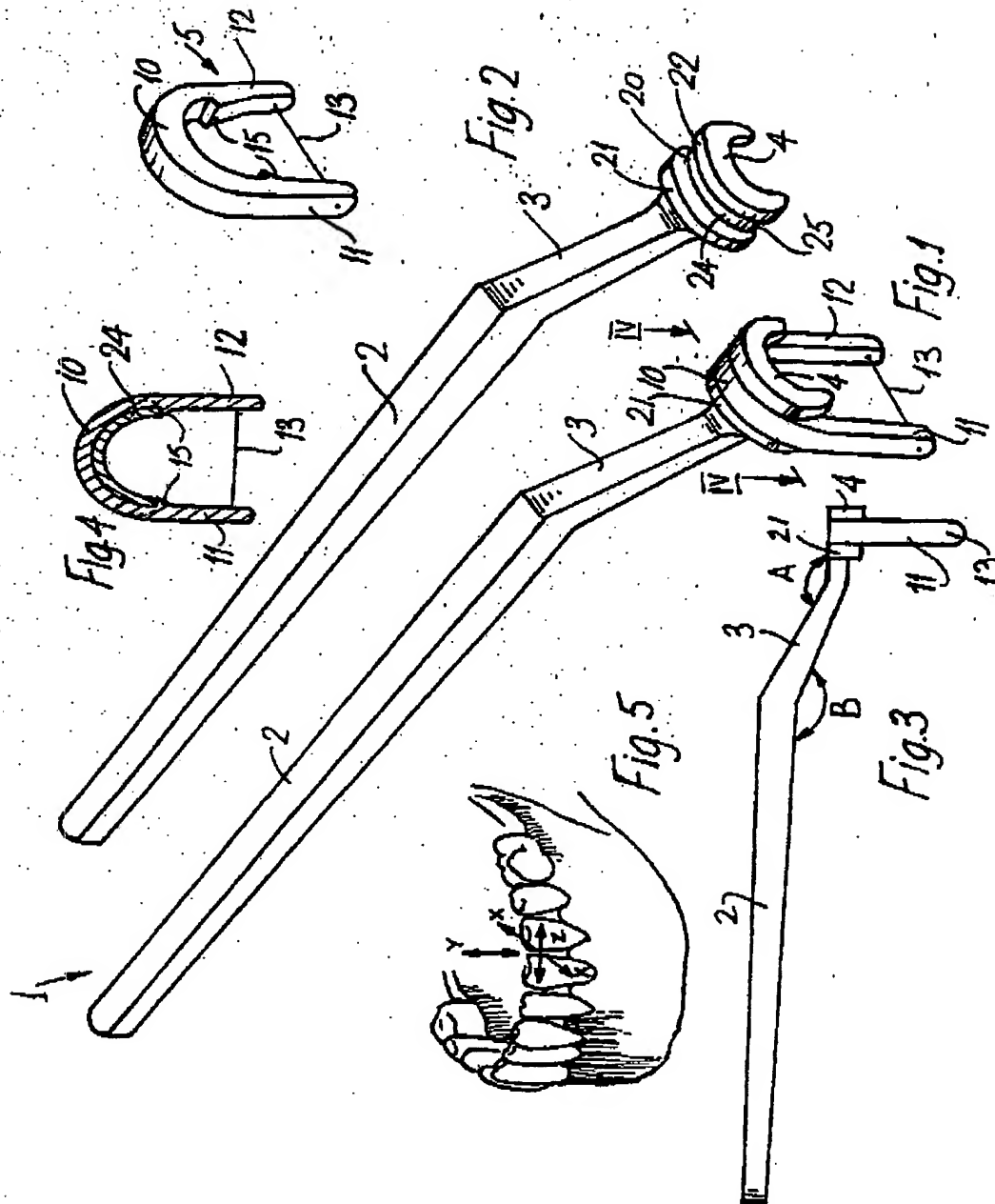
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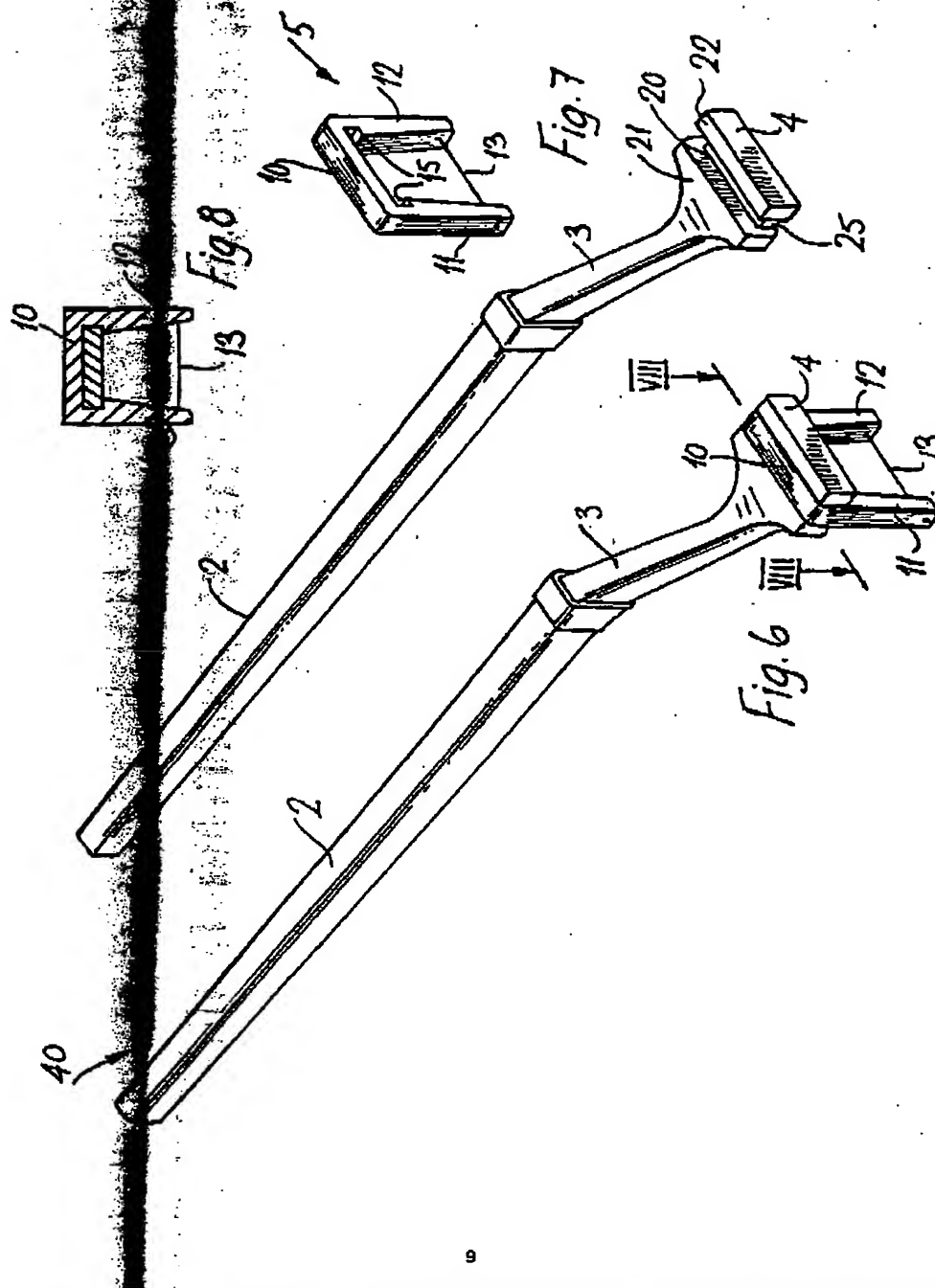
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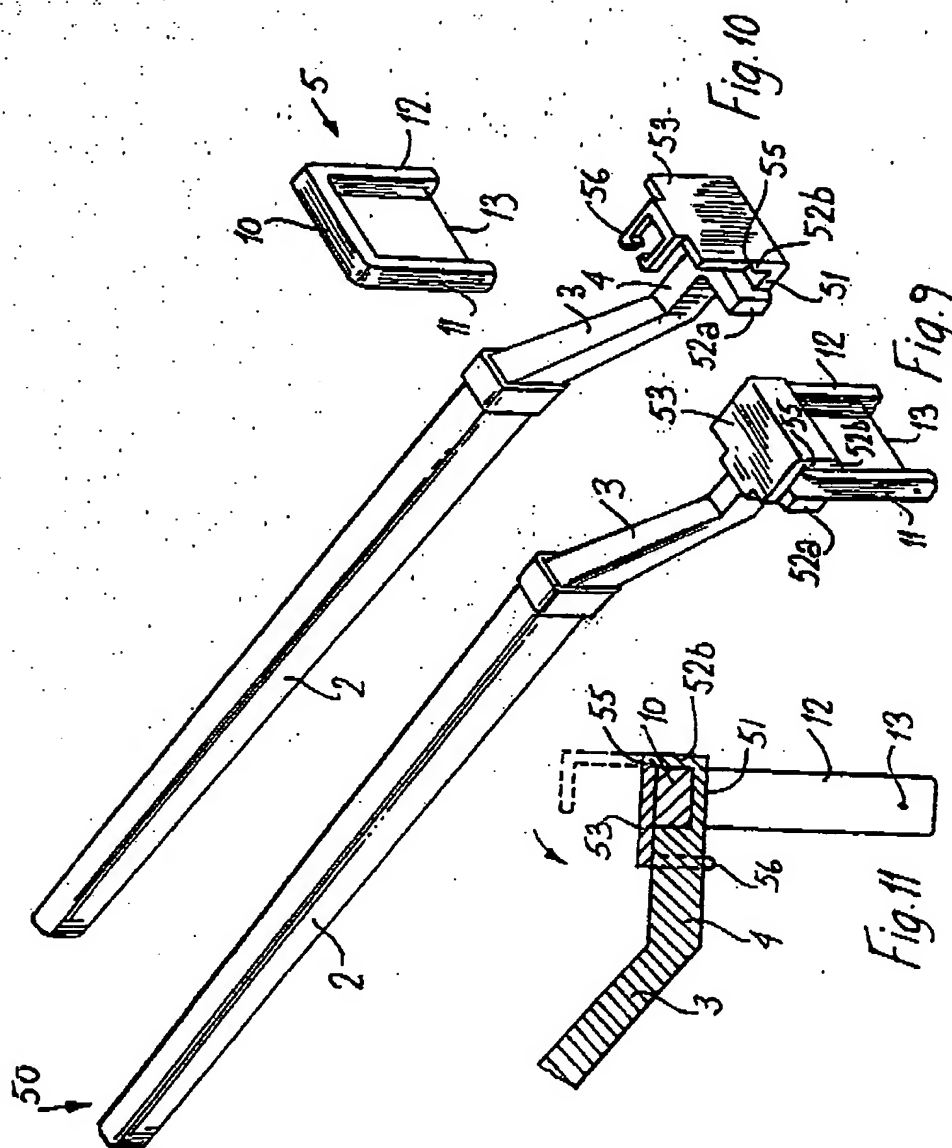
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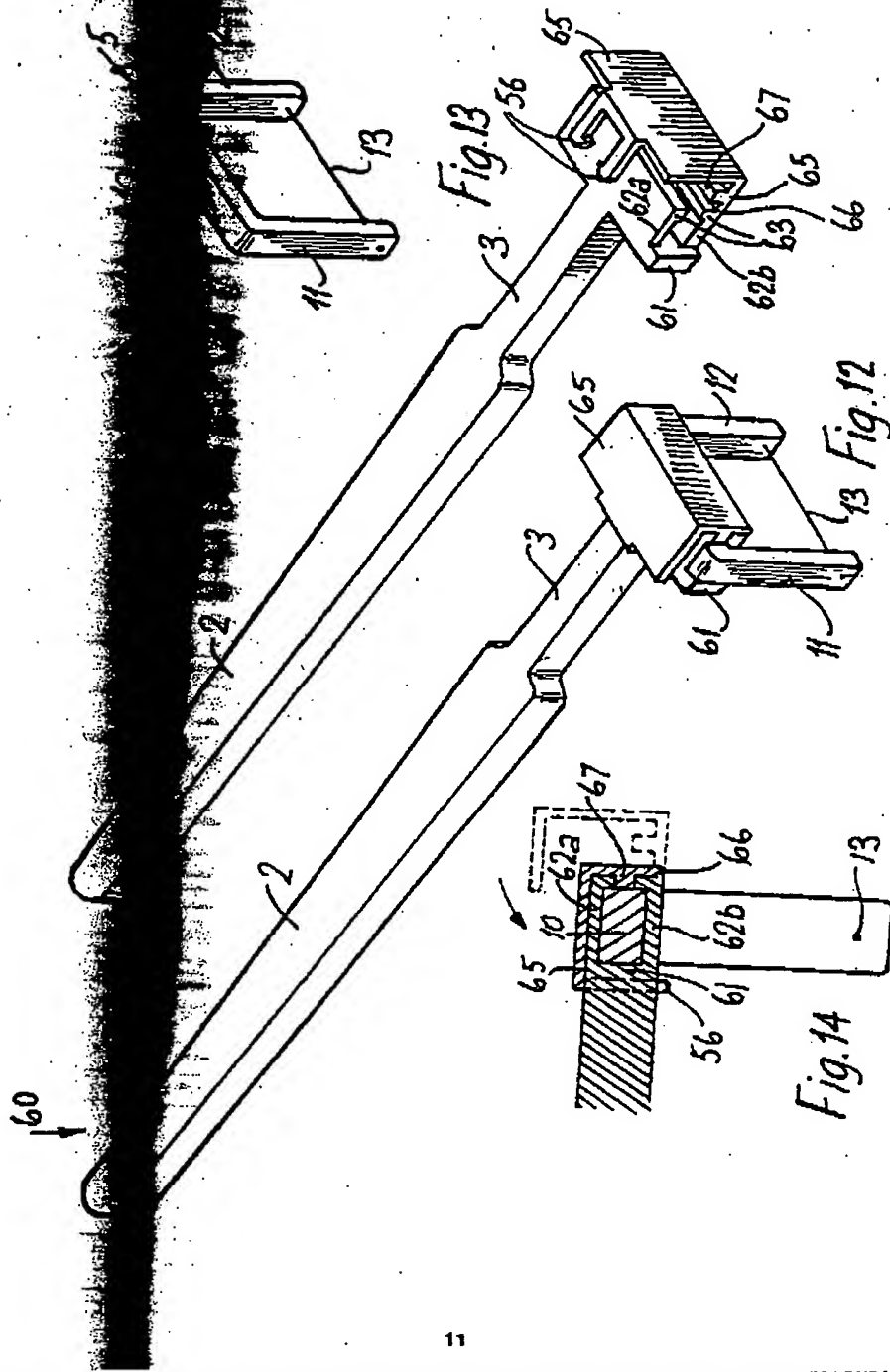
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